

CLAIMS

1. A film scanner for reading an image formed on a film, said film scanner comprising:

an imaging device that senses a part of said image;

5 a transport table that supports said film;

a stepper motor that moves at least one of said imaging device and said transport table in a predetermined direction, so that said imaging device can sense the whole of said image; and

10 a motor drive circuit that pulse-drives said stepper motor in steps, said motor drive circuit enabling micro-stepping control of the stepper motor.

2. A film scanner according to claim 1, wherein said motor drive circuit drives said stepper motor in basic steps when said image is read in a pre-scan, and drives said stepper motor by minute steps smaller than said basic step under said micro-stepping control when said image is read in a main-scan.

3. A film scanner according to claim 2, wherein said minute step in said main-scan is set to $1/n$ of said basic step (n being a natural number of 2 or more).

20 4. A film scanner according to claim 3, wherein said motor drive circuit is configured to enable switching to drive in a 2-2 phase excitation mode in basic full-steps, drive in a 1-2 phase excitation mode in half steps, drive in a $W1-2$ phase excitation mode in quarter steps, and drive in $2W1-2$ phase excitation mode in eighth steps.

25 5. A film scanner according to claim 4, wherein said motor drive

circuit drives said stepper motor in said 2-2 phase excitation mode in said pre-scan, selects one of said 1-2 phase excitation mode, said W1-2 phase excitation mode, and said 2W1-2 phase excitation mode to drive said stepper motor in said main-scan.

5 6. A film scanner according to claim 1, wherein said transport table is provided detachably with a film holder for holding said film, a position of said film holder to said transport table being moveable to change said image to be read.

10 7. A film scanner according to claim 1, further comprising a rack provided at said transport table along said predetermined direction, and a pinion attached to an output shaft of said stepper motor to engage with said rack.

15 8. A film scanner provided with an imaging device for performing a main-scan of a film on which an image is formed to scan said image and a scanning mechanism for moving said film in a sub-scan direction perpendicular to said main-scan direction with respect to said imaging device, characterized in that said scanning mechanism is provided with a transport table for supporting said film and transporting it in said sub-scan direction and a transport
20 mechanism for making said transport table move in said sub-scan direction, said transport mechanism is provided with a stepper motor as a source of drive power and a motor drive circuit for pulse driving said stepper motor in steps, and said motor drive circuit is configured to enable micro-stepping control of the
25 stepper motor.

9. A film scanner for reading an image formed on a film, said film scanner comprising:

an imaging device that senses a part of said image;

a transport table that supports said film;

5 a stepper motor that moves at least one of said imaging device and said transport table in a predetermined direction, so that said imaging device can sense the whole of said image; and

a motor drive circuit that pulse-drives said stepper motor in steps, said motor drive circuit controlling an excitation mode
10 to change the step of said stepper motor.